2013 GEDC Panel Discussion
Impact of Globalization and Information Technology on Engineering Education

Mass-Production vs. Mass-Education

When it comes to eLearning, can universities learn from industry in this era of technology and globalization?

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Two things that have changed the world…

Mass production in industry in the 19th century

Mass education at universities in the 20th century

They both share the same goal and approach…

the goal: serve many and save money

the approach: standardization

When competitions intensified in the 80s', industry took a **price**-focused proposition

At the technology front,
> they used automation to expand the volume

At the globalization front,
> they exploited outsourcing to lower the cost

The price-focused proposition is unsustainable!

Products commoditized, jobs eliminated, skills lost, plants relocated, and businesses closed

Should universities follow the same <u>price-</u>focused proposition in eLearning today?

At the technology front,

- should we continue to robotize lectures and digitize courseware to expand the enrollment
  - same as using automation to increase the volume

At the globalization front,

- should we continue to recruit more and more international students to fill the classroom seats
  - same as using outsourcing to decrease the cost

What are the key lessons that universities can learn from industry…..

1. The value-focused proposition is more sustainable
2. One must always innovate from the core business

So, universities should ask themselves…

What are the new, innovative value-propositions of campus education which eLearning can bring to enrich students' learning experiences on-campus?

A new value proposition of campus education — learn global *context* beyond just content

At the technology front,

we should use eLearning to eliminate the distance of student interaction, rather than just maximize the distance of course delivery

At the globalization front,

we should use eLearning to provide global learning experiences on local campus as "a right for the many," rather than just "a privilege for the few"

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The iPodia Alliance: classrooms-without-borders
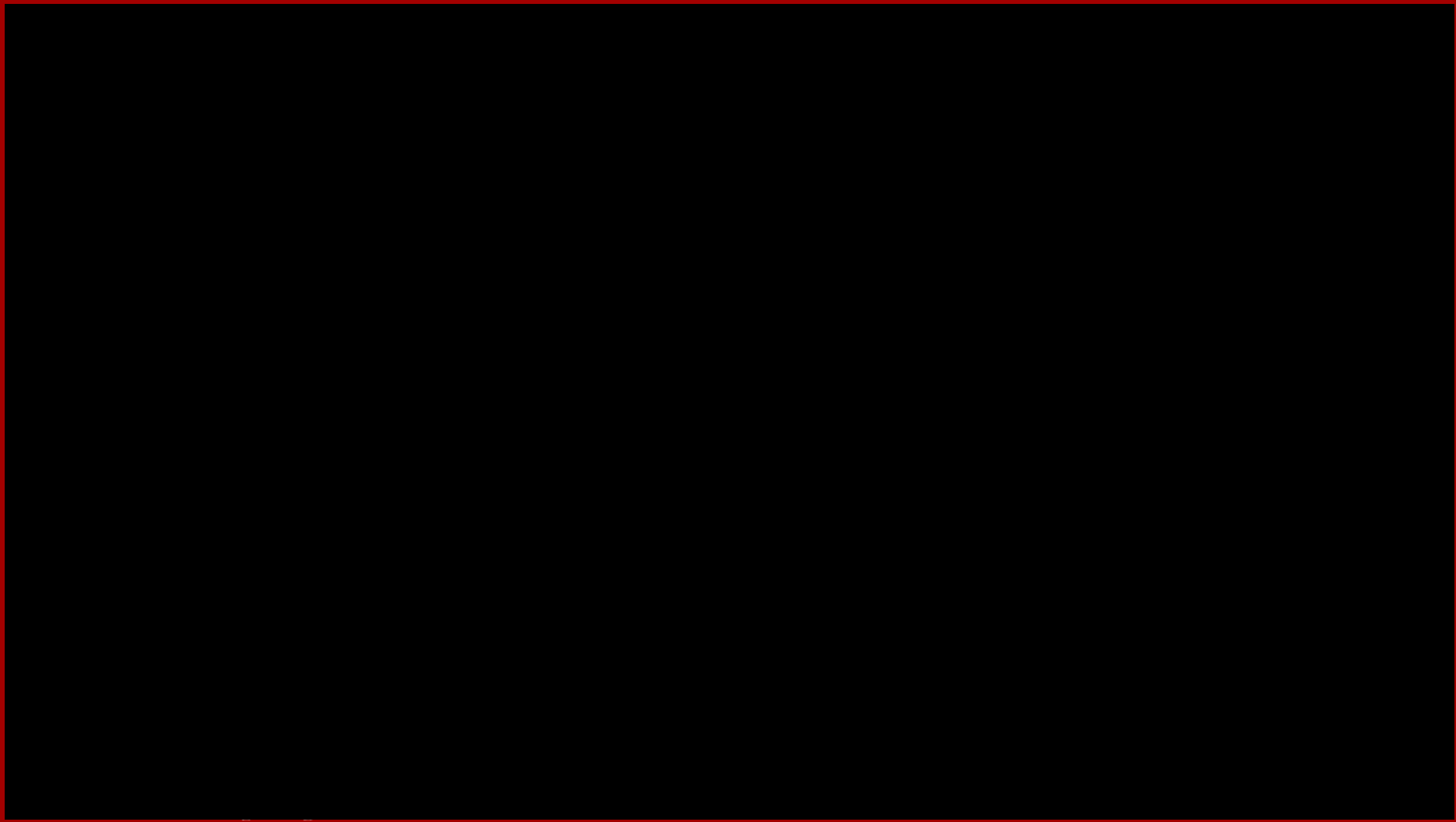
Borderless interactive learning

The "i" in **iPodia** stands for:

- **Inverted learning**
  - Because context is best acquired via guided engagement by learners
- **Interactive learning**
  - Because what you learn depends on with whom you learn
- **International learning**
  - Because diversity can increase everyone's learning opportunity
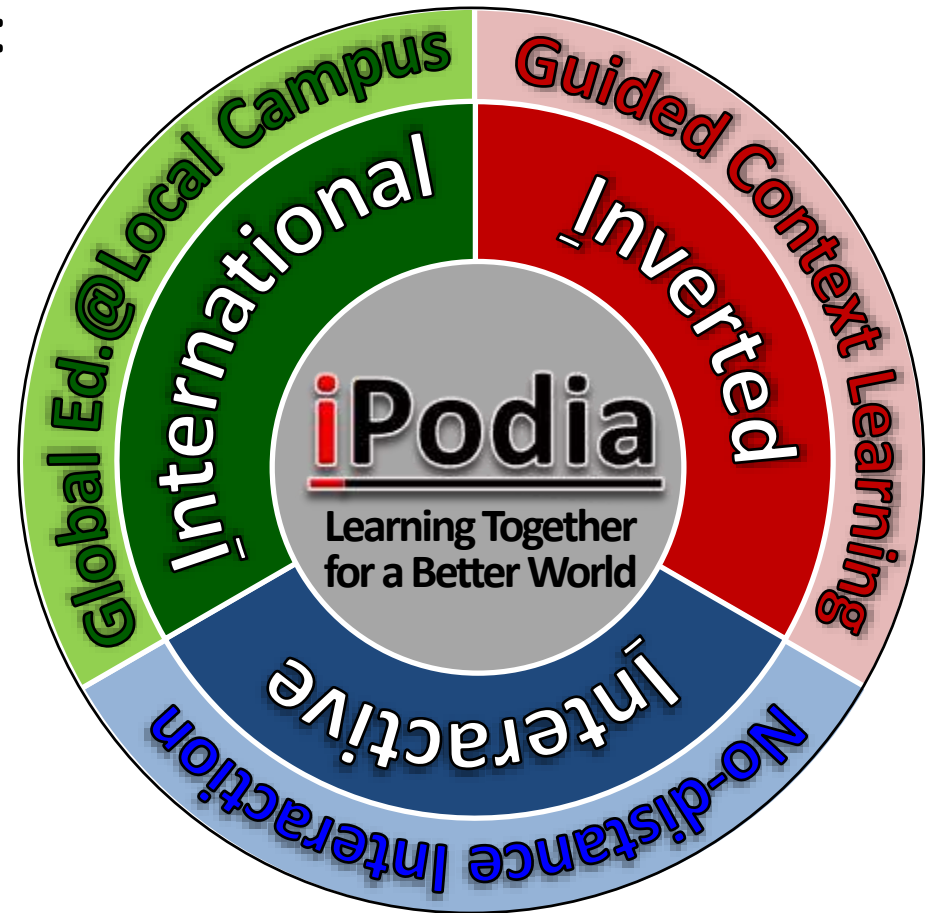
Inverted: enables peer-learning

Content Lecture

- Slides, lecture videos, & MOOC courseware are posted online
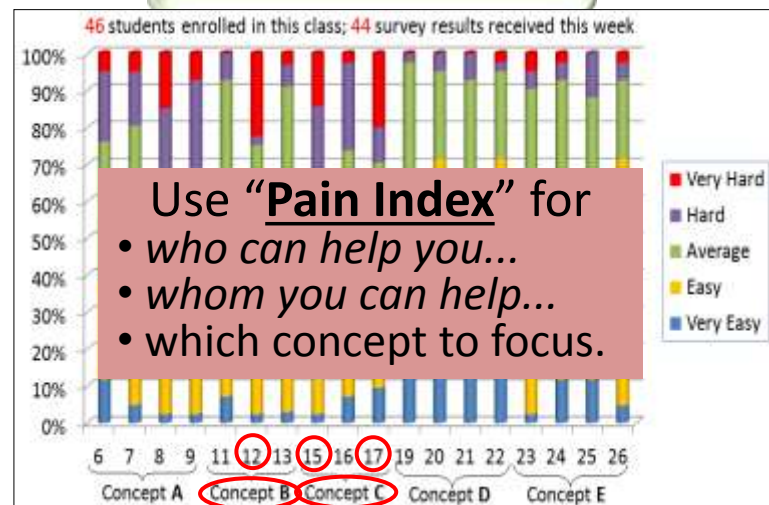- Students study lecture contents at home, & complete quiz, feedback, and online discussions

48 hours before the class starts

Quiz | Pain Index | Online Discussion *Before Interaction*

Homework

Student Feedback

- Homework feedbacks expressed as "**Pain Index**" are used to pair students' peer-to-peer learning and guide teacher's preparation of in-class interactions

24 hours before the class starts

46 students enrolled in this class; 44 survey results received this week

Use "**Pain Index**" for
- *who can help you...*
- *whom you can help...*
- which concept to focus.

Legend:
- Very Hard
- Hard
- Average
- Easy
- Very Easy

6 7 8 9 11 12 13 15 16 17 19 20 21 22 23 24 25 26
Concept A | Concept B | Concept C | Concept D | Concept E

Context Interaction

- Students are led by teacher to interact with global peers in iPodia classroom on their campuses
- Students again join online discussions and cross-campus team projects after in-class interaction

Team Project | Online Discussion *After Interaction*

Schoolwork

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iPodia™ **I**nteractive: empowers participation

108 students *interact asynchronously via Blackboard System*

USC-A USC-B Technion Aachen PKU KAIST

54 students interact synchronously via iPodia classroom @ 3 campuses in 2 sessions

Technion iPodia Audio/Video Links USC iPodia Audio/Video Links Aachen

*All students simultaneously interacts with 54 classmates and **6 cohorts***

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International: embraces diversity
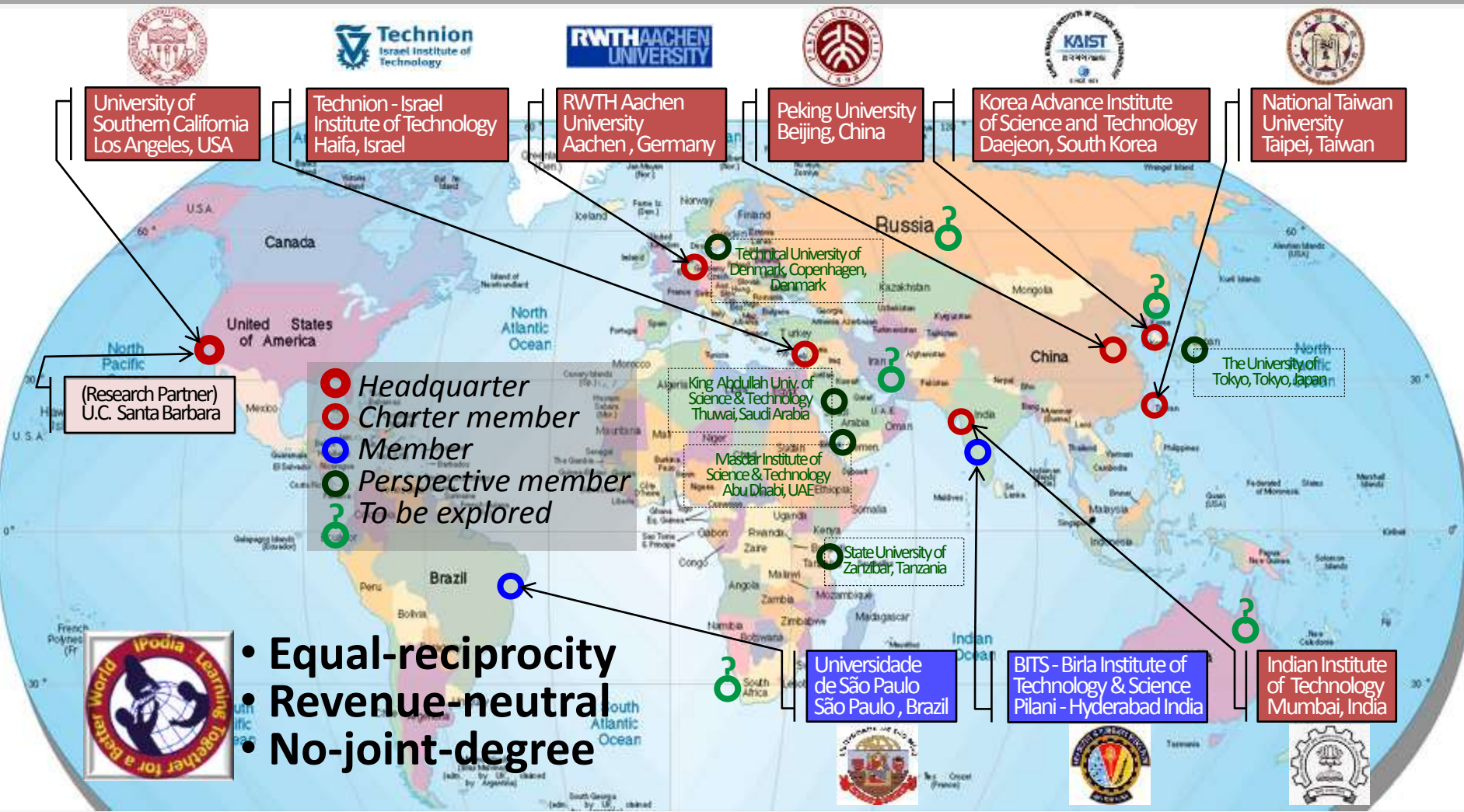
- **Equal-reciprocity**
- **Revenue-neutral**
- **No-joint-degree**

Map labels:
- University of Southern California, Los Angeles, USA
- Technion - Israel Institute of Technology, Haifa, Israel
- RWTH Aachen University, Aachen, Germany
- Peking University, Beijing, China
- Korea Advance Institute of Science and Technology, Daejeon, South Korea
- National Taiwan University, Taipei, Taiwan
- (Research Partner) U.C. Santa Barbara
- Technical University of Denmark, Copenhagen, Denmark
- King Abdullah Univ. of Science & Technology, Thuwai, Saudi Arabia
- Masdar Institute of Science & Technology, Abu Dhabi, UAE
- The University of Tokyo, Tokyo, Japan
- State University of Zanzibar, Tanzania
- Universidade de São Paulo, São Paulo, Brazil
- BITS - Birla Institute of Technology & Science Pilani - Hyderabad India
- Indian Institute of Technology, Mumbai, India

Legend:
- Headquarter
- Charter member
- Member
- Perspective member
- To be explored

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Learning around the clock

University of
Southern California
Los Angeles, USA   *DST

Korea Advance Institute
of Science and Technology
Daejeon, South Korea

Universidade
de São Paulo
São Paulo , Brazil

National Taiwan
University
Taipei, Taiwan

RWTH Aachen
University
Aachen , Germany   *DST

Peking University
Beijing, China

Technion - Israel
Institute of Technology
Haifa, Israel   *DST

BITS - Birla Institute of
Technology & Science
Pilani - Hyderabad India

Indian Institute
of Technology
Mumbai, India

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